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Consensus MKWLVLGLV AFSECIVKIP LR..KTMR.T LS.KN.LNNF LIKE.AYRLSQ IS.RGSNLT- 60 (2) (1)

boPAG 8	.....	L.....	TKM....	QEA	IRE	QL	ED.	D.QPHS...	H.DPDKKFS.	59
boPAG 2	.....	L.....	IL.	KKM..	L.E.	RE.	L....	E.Q.....	KN---D.KI..	56
boPAG12	.....	L.....	IL.	KM..	L.E.	RE.	L....	E.R.....	KK---D.KI..	56
boPAG11	.....	F.....	IML	TKT....	EI	WRE	KL..	S. E.Q.N.M.D	D.ASDPK.S.	59
boPAG 9	.....	I.....	.....	QV....	K.	G.	M.K..	...HP.....	..F.....	59
boPAG10	.....	G.....	L..	M.I..	Q.M....	E.	RERHL.T..	SE.HP.N...	KAANDQ.IIY	60
boPAG 4	.....	.....	.....	RV....	TK.	G.	M....	V.H.....	..F.....	59
boPAG 6	.....	.....	.....	RV....	NA	I.G..	T...I	..H....P.	..F.....	59
boPAG 1	.....	.....	.....	RL....	NV	V.G..	M....	..H.S....	..F.....	59
boPAG 3	DD.....	.....	.....	RV....	N.	V.G..	I...I	..HV.....	..F.....	59
boPAG 5	.....	L TS.....	IL.	TKV....	K.	E.	M....	..Q.....	..S...I..	59
boPAG 7	.....	.....	.....	RV....	K.	G.	M....	..DP.....	..H ..F.....	59

FIG. 1A

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Consensus .HPLRNI.D. .YVGNITIGT PPQEFQVVD TGSSDLWVPS I.C.S.AC.T H.RFRH..SS 120 (62)

boPAG 8	S.Q.K.FQNA V.F.T.....N..	VD.Q.PS.SK .K..DPQK.T	119
boPAG 2	I.....YL.T.A.....R....	...AN....C .T.T.P..Y. .KT.NPQN..	116
boPAG12	I...K.YL.M.A.....R....	...A.....S.V.P..Y. .KT.NLHN..	116
boPAG11	T....AL.M.A.....K.R.....	...K.I.P..H. .IT.D.HK..	119
boPAG 9	I.....MNL V.....	FCTM-P..SA PVW..QLQ..	118
boPAG10	H...SYK.F.S.I...N...L.....	Y.Q.SS.YK .NS.VPCN..	120
boPAG 4	I.....R.F?.....I.....	F.N.ST.SK .D....IE..	119
boPAG 6	-.....R.L.F.....I.....	A. F.N.SS.AA .V....HQ..	118
boPAG 1	T.....K.L.V.M.....A.....	DF.T.P..S. .V....LQ..	119
boPAG 3	T.....K.L.I.....F.....	DF.T.R..S. .V....LQ..	119
boPAG 5	I.....M.M.V...K.....	VF.P.S..S. .I....LE..	119
boPAG 7	I.....R.I.F.....I.....	D.N.TS.A. .V....LQ....	119

FIG. 1B



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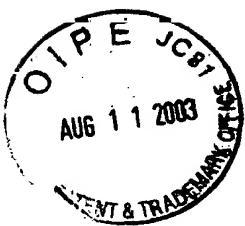
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Consensus TFR.TNKTF. I.YGSG.MKG .L..DTVRIQ .LVSTDQPPG LS.EE-.GF. ....DGVLG 180  
(120)

boPAG 8	..QPL.QKIE LV....T....	V.GS..IQ..	N..IVN.I..	..QNQSS.VL EQVPY..I..	179
boPAG 2	S..EVGSPIT .F....IIQ.	F.GS.....	N..PE.S..	..L...Y..D SLP.F..I..	174
boPAG12	S.GQ.HQPIS .S..P.IIQ.	F.GS.....	N..LK.S..	..Q...Y..D GAP.F....	174
boPAG11	..L.RRP.H .L....M.N.	V.AY.....	K.....	..LQQ.F..D NAP.F....	177
boPAG 9	..QP.....T .T....S...	F.AY.....	D.....	..VV..Y..LE GRN.Y....	176
boPAG10	..KA...I.N TN.TATSI..	Y.VY.....	N..VA....	..LK..F..D DVP.F..I..	178
boPAG 4	..LSRR..S .T....RIEA	LVVH.....	D.....Q..	..CL...S..E GMR.F....	177
boPAG 6	..P.....R .T....R...	VVH.....	D.....	..CLKD.S..K GIP.F..I..	176
boPAG 1	..L.....R .T....R...	VVH.....	N.....	..I...Y..E GRI.Y....	177
boPAG 3	..L.....R .T....R...	VVAH.....	D.....	..V...Y..E GRAYY....	178
boPAG 5	..SGL.Q...S .T....ST..	F.AY.....	D.L....E..	..M...H..E DLPF-....	177
boPAG 7	..P.....R .I....R.N.	VIAY.....	D.....	..V...Y..A HKRF-.I..	177

FIG. 1C



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Consensus L.YP..S..G AIPFDNLKN QCAISEPVFA FLYS....EG SVMFEGVDH .YKGEINW. 240  
(180)

bOPAG 8	.A..SLAIQ.	TT.V.....	REV.....	SRPENI	T.....	T.H..K.Q.I	239
bOPAG 2	.AF.AMGIED	T.....	WS H..F.....	NTNKP.	.....	R.....I	234
bOPAG12	.A..SI.IK.	I.....	WS...F.....	NTCQP.	.....	R.....I	234
bOPAG11	.S..SLAVP.	T.....	K..Q.....	TRKEN.	L.L.....	S.H..K..I	237
bOPAG 9	.N..NI.FS.	.....	.....	KNKQ.	.....	Q.....I	236
bOPAG10	.G..RRIT.	N.....	WK..V.....	SQKEN.	.....NR A.....	V	238
bOPAG 4	.S..TNI.PS.	.....	YK...E.....	KDER.	.....A..R.....	I	237
bOPAG 6	.S..NKTFS.	F.....	K...E.....	KDKQ.	.....R.....	V	236
bOPAG 1	.N..NI.FS.	.....	K...R.....	KDER.	.....R..E.....	V	237
bOPAG 3	.N..NI.FS.	.....	IL..KDEQ.	.....	R..E.....	V	238
bOPAG 5	.N..DM.FIT	T.....	F.....	GKVK--	.....T.....	V	235
bOPAG 7	.N..WNL.WSK	M.....	K...E.....	NI----	-----	---	213

FIG. 1D



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Consensus P..Q.G.W.. .MDRISM.R. VIACS.GC.A LVDTGTS.I. GP.RLV.NI. KLI.A.P-.G 300  
(239)

boPAG 8	.VT.ARF.QV A.SSMT.NGN .VG..Q..Q. V.....LLV ..TH..TD.L ...NPN.ILN 299
boPAG 2	.VS.TSH.QI S.NN...NGT .T...C..E. .L.....M.Y ..TK..T..H ..MN.RL.EN 293
boPAG12	.VS.TRY.QI S.N...NGN .T...R..Q. .L.....M.H ..T..IT..H ..MN.RH.Q. 293
boPAG11	.VS.TKS.LI TV.....NGR .G.EH.E. ....L.H ..A.P.T..Q .F.H.M..Y. 296
boPAG 9	.LIEA.E.RV H.....K.T .....D.E. .H.....H.E .G...N..H R..RTR..FD 295
boPAG10	.VS.V.S.HI NI.S...NGT .V..KR..Q. SWIR..-RLSA W.K.I.SK.Q ...H.R..ID 296
boPAG 4	.LMKA.D.SV H.....K.K .....G.K. ....S.D.V ..ST..N..W ...G.T..Q. 296
boPAG 6	.LI.V.D.FV H...TT.K.K .....D.K. ....D.V ..ST..N..W ...R.R..L. 295
boPAG 1	.LI.A.D.SV H.....IE.K I...D.K. ....D.V ..R...N..H R..G.I..R. 296
boPAG 3	.LIEA.D.II H.....K.K I...GS.E I.....A.E ..RK..NK.H ...G.R..RH 297
boPAG 5	.LI.A.E.SL H.....K.K .....G.E FY.....L.L ..R...N..Q ...G.T..Q. 294
boPAG 7	-----T.N.E .....E..A. ....S.N.Q ..G..ID..Q RI.G.T..R. 257

FIG.1E



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Consensus SE..VSC.AV ..LPSIIIFTI NGI.YPVP.. AYI.KDSRG. C...F..... -S..ET 360  
(295)

bOPAG 8	D.QML..D.I NS..TLLL..	...V....PD Y..QRF.ERI	FIS.QGGTE	ILKNLGTS...	359
bOPAG 2	..YV...D..KT..PV..N.	...D..LRPQ ...I.IQN-S	RSV.QGGTE	...N..SLN.	348
bOPAG12	..YV...D..KT..PV..N.	...D..L.PQ ...T.AQN-F	LSI.HGGTE	...T..SP..	348
bOPAG11	..YM.L.PVI SI..PV....	...D.S..RE ...Q.I.NSL	LST.HGD-D	...T.---DQ	348
bOPAG 9	.KHY...F.T KY...T.I.	...K..MTAR ...F.....R	YSA.KENTV	...R.TSR..	351
bOPAG10	R.HV...Q.I GT..PAV...	...D....AQ ...QSL.G-Y	FSN.LVRPQ	...RVNES..	352
bOPAG 4	..HY...S..NS.....	KSNN.R..GQ ...L.....R	FTA.KGHQQ	...S..ST.M	352
bOPAG 6	PQYF...S..NT.....	...N.RL.AR ...H.....R	YTA.KEHRF	...S..PI..	351
bOPAG 1	..HY.P.SE. NT...V...	...N....GR ...L..D..R	YTT.QENRV	...S..ST..	352
bOPAG 3	.KYYI..S..NT.....	...N..C.GR ..VL.....R	YSM.QENKV	...S..ST..	353
bOPAG 5	..HYI..F..IS.....	...NI...AR ...H.....H	YPT.KENTV	...ST..-T..	350
bOPAG 7	.KYY...S..NI.....	..VN....PR ...L.....H	YTT.KEKRV	...RR..-T.S	313

FIG. 1F



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Consensus WILGDVFLRL YFSVFDGRND RIGLA.AV  
(323)

boPAG 8	.....Y.....N.....P.A	387
boPAG 2	....I...Q.....K.R.....P..	376
boPAG12	....G...Q.....R..S.....-Q.	375
boPAG11	.....Y.....N.....P..	376
boPAG 9	....A..R.....R..	379
boPAG10	.....N.....P..	380
boPAG 4	.....RK.....TK.	380
boPAG 6	.L.....R.....R..	379
boPAG 1	.Y.....R.....R..	380
boPAG 3	.....V.....R..	381
boPAG 5	.....QV-	377
boPAG 7	.V..E.....RR.	341

FIG. 1G



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Consensus MKWLVLGLV AFSECIVKIP LRRVKTMRKT LSGKNMLNNF LKEHPYRLSQ ISFR.SNLTI 60 (3)  
↓ (1)

OV	PAG	4	.....	F.....	.....	.....	DV.....	P.....	.....	G....	I..	60
OV	PAG	7	.....	L.....	F.V.....	L.....	N.....	V.....	Y.....	P.....	D..	60
OV	PAG	3	.....	F.....	V.....	L.....	N.I.....	V.....	Y.....	P.....	D..	60
OV	PAG	6	.....	SI.....	.....	.....	E.....	.....	A.....	.....	G.....	60
OV	PAG	1	.....	.....	.....	.....	N.....	K.....	S.....	A.....	A.....	60
OV	PAG	5	.....	SV.....	RV.....	E.....	MK.NV.QE.	NE.SL.....	KY.....	A.....	N.T.N.KMAF	60
OV	PAG	9	.....	.....	.....	M.....	N P.....	M.....	A.....	.....	GL....	59
OV	PAG	2	.....	W.....	L.....	IM.....	TKT.....	EI RE..L.....	E.QAN.M.D	D.ASDPK	ST	60
OV	PAG	8	.....	A.....	I.....	.....	SN. A.....	.....	K.....	.....	G.....	T 60

FIG. 2A





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Consensus HPLRN..D.. YVGNITIGTP PQEFQVVFDT GSSDLWVPS. FC.S.T---C S.H.RFRH.Q 120 (60)

ovPAG 4	IR.TF	.....L.....V.....V L.N.S.....	I.V.....L.	117
ovPAG 7	L...MK.IF	.....P.....S T.....I .WN.S.....	.TLV..K.R.	117
ovPAG 3	L...MK.IF	.....A.....I .N.S.....	.TRV.....R.	117
ovPAG 6	TK.LV	.....S.....D .AIEA.....	.L.T.....L.	117
ovPAG 1	IM.ML	.....L.....I N.L.P.KRP.	.KQDK.K.H.	120
ovPAG 5	V.M..FL.LA	..P.M...RG GEQ.R.....N .T.PA....	YS.IT.KYWE	117
ovPAG 9	S.YI.ML	T.....K...I.....N .T.PA....	.TQA...YR.	116
ovPAG 2	AL.MA	.....V.....K.R.....I K.I.PA....	YT.IT.D.HK	117
ovPAG 8	M.IW.LL	L.....L.R.....L L.N.S.....	AK.VM...RL	117

FIG. 2B



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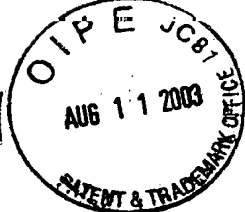
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Consensus SSTFR.TNKT F.I.YG.G.M KGVVAHDTV R IGD LVSTDP FGLS..E.GF ...PFDGVLG 180  
(120)

ovPAG 4	.....T.....	W.T..A.T.	.....	I.....	.....	MA.Y..	HGRR.....	177
ovPAG 7	.....T.....	W.T..A.T.	.....	I.....	.....	MA.Y..	MDRR...I..	177
ovPAG 3	.....LA....	G.M..A.K.	.....	V.....	.....	VV.S..	EHRQ.....	177
ovPAG 6	.....P..R..	S.T..C.TV	.....	V.....	.....	TA.HVS	RCT.....	177
ovPAG 1	.....F..D..	R.YF.S.T.	R.F.....	.....	.....	IFL.SWL	D-I...I..	179
ovPAG 5	...Y.H.T.P	E.A..S.RI	..HL.Y..IQ	.N.....	.....	LV.Y..	NGL...I..	177
ovPAG 9	.....L..R..	C.T..S.GL	I.....	.N.....	.....	TLK.Y..	ENI.....	176
ovPAG 2	.....L.RRP	R.L..S.M.	N..L.Y...	.N.....	.....	LQQF..	DNA.....	177
ovPAG 8	...Y.L....	M.F.RV.KI	E...VR....	.....A..T	.....	IA.T..	ENTTL..I..	177

FIG. 2C



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Consensus LNP...S..G .IPIFDKLN EGAISEPVFA FYLSKD.QEG SVMFGGVDH .YYKGLNWV 240  
(180)

ovPAG 4	....RQ.CCR PT.....Q.....E.....R.....	237
ovPAG 7	....RQ.CSK TKW.....S Q.....E.....T.....SL	237
ovPAG 3	....NL.FSK T.....E.....S.....K.....	237
ovPAG 6	....SI.FWS T.....G.....R.....	237
ovPAG 1	....KI.FS. A.....F.....N..K.....R.....	239
ovPAG 5	....N-.IL. A.....N.K Q.....I.....GTVN. .L.L.....K A.....I	236
ovPAG 9	....NI.FS. AV.....L.....F.....E.....R..E.....	236
ovPAG 2	..S..SLAVP. T.....Q Q.....I.....TNKEN. .L.L.....S.H..K...I	237
ovPAG 8	..S..NT.CF. A.....N-----	212

FIG. 2D



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Consensus PL..AGDW.I .VDRISM.R. VIACS.GC.A LVDTG.S.I. GP.RLVDNIQ KLIGA.P.G. 300  
(240)

ovPAG 4	..VK.D..T. Q.....R.E.....D..D. .L...A.F.H .G..I.D.. . . . .SE.RDL 297
ovPAG 7	..VK.D..S. H.....R.E.....D..D. .L...A.F.H .G..I.D.. . . . .SEQRDF 297
ovPAG 3	..IK....SV R..S.T.K.E.....D..R. ....S.H.Q .G..I..V. ....TM.Q.S 297
ovPAG 6	..IP..N.MV HM...YIE.N.....A..K. V...AAF.E .KSQ...M. .F...R.R.S 297
ovPAG 1	..IHP.E.S. PL.....R.K.....G..E. .G.T.L.L .RTV.E... .H...TQQCF 299
ovPAG 5	..IRV...R. R..H...KGK L.G..G..E. ....P.L.N .T...T... R...M.L.P 296
ovPAG 9	..TK....IV RL....IG.K....GD.E. V...TAF.G .RK..KK.. ....RRR.N 296
ovPAG 2	..VSQTKS.L. T.....NGK ..G.EH..E. ....T.L.H .AGP.T... .F.H.V.YDS 297
ovPAG 8	-----, TMK.-----E .....D..R. ....S.H.Q .G.....V. .H..TM.Q.S 258

FIG. 2E



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Consensus KHYVSCSAVN TLPSIIFTIN GINYPVPAQA YILK.S.G.C.YT.F...RVR .STE.WVLGD 360  
(300)

OV	PAG	4	...	I	...	...	...	...	...	...	G.T.H.	...	A.RAK	...	T...	S	...	357								
OV	PAG	7	...	I	...	...	...	...	...	...	G.T.H.	...	A.RAK	...	T...	S	...	357								
OV	PAG	3	M	...	P	...	...	...	...	...	GFT.H.	...	A.RAK	...	T...	S	...	357								
OV	PAG	6	Y	...	P	...	V	...	R	...	S	...	T	KENQWS	P	...	I	...	357							
OV	PAG	1	EYF	...	Y	A	...	V	...	P	...	LV.D.R.Q.	SP.QVN	AN	P	A	N	I	...	359						
OV	PAG	5	...	TI	I	...	...	...	...	TL	...	T.Q.G.	F.T.KGA	...	F	KHR	T	...	356							
OV	PAG	9	...	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
OV	PAG	2	EYM	...	PVIS	I	...	PV	...	S	D	S	...	E	...	Q	I	NSL	LSS	HGDN	---	---	DK	I	...	353
OV	PAG	8	M	...	P	...	...	...	...	GR	...	DEF	R	...	N	KKKIA	TF	Y	...	E	...	...	...	...	...	318

FIG. 2F





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boPAG	2	4	5	6	7	8	9	10	11	12
Hybrid (d25)	4		1	1	1	5	1	1	1	
Immuno (d25)		19								
RT-PCR (d19)	9					11	3		3	6

FIG. 3



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FIG. 4

BoPAG:	1	2	3	4	5	6	7	8	9	10	11	12
1	100											
	100											
2	73	100										
	57	100										
3	91	74	100									
	86	58	100									
4	88	73	87	100								
	76	55	73	100								
5	86	60	86	85	100							
	75	61	74	76	100							
6	89	73	88	89	84	100						
	80	57	78	76	70	100						
7	87	73	87	86	85	89	100					
	79	56	78	71	72	77	100					
8	68	68	67	67	70	69	71	100				
	53	55	51	49	54	53	53	100				
9	87	74	88	85	85	87	86	68	100			
	77	59	78	68	74	74	71	53	100			
10	70	72	69	68	71	70	68	71	69	100		
	56	50	55	53	58	57	53	55	57	100		
11	74	77	73	73	76	73	75	72	73	72	100	
	59	62	58	56	62	59	59	56	57	57	100	
12	75	90	75	74	77	75	74	70	75	73	79	100
	61	83	60	58	63	59	58	56	60	60	64	100





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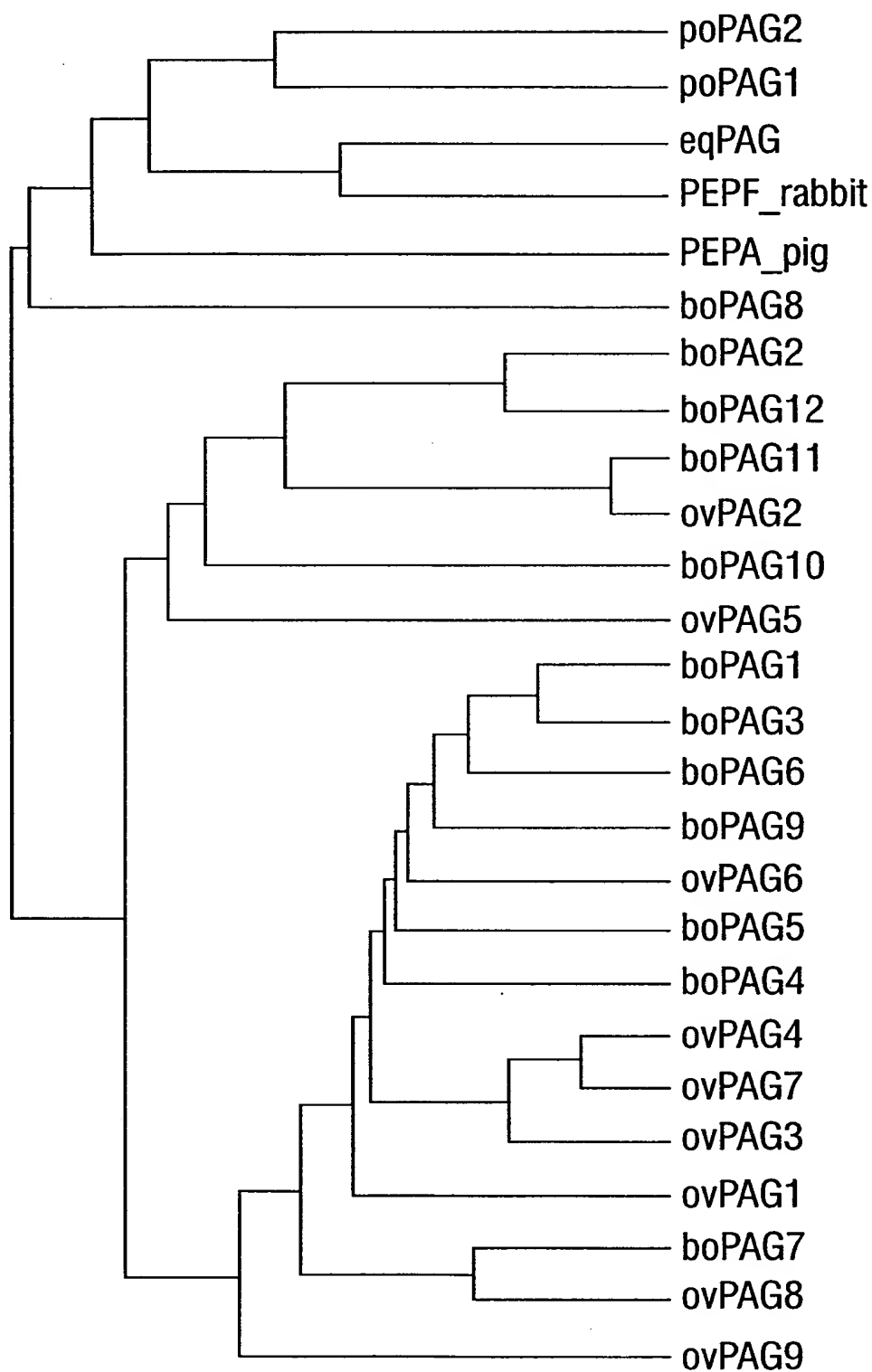


FIG. 5



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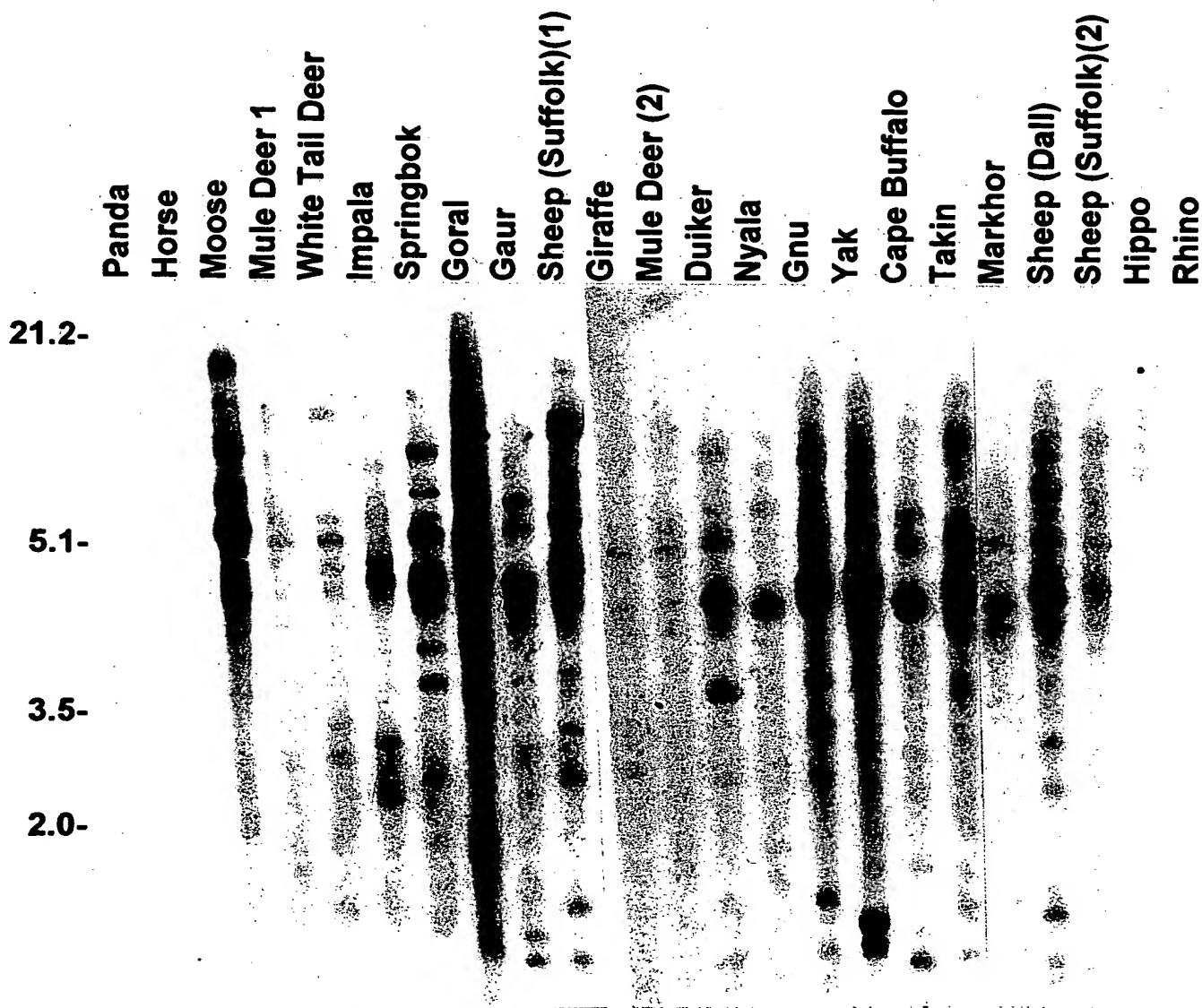


FIG. 6